HNS ANDON
Call System

User's Manual

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13 September 2011

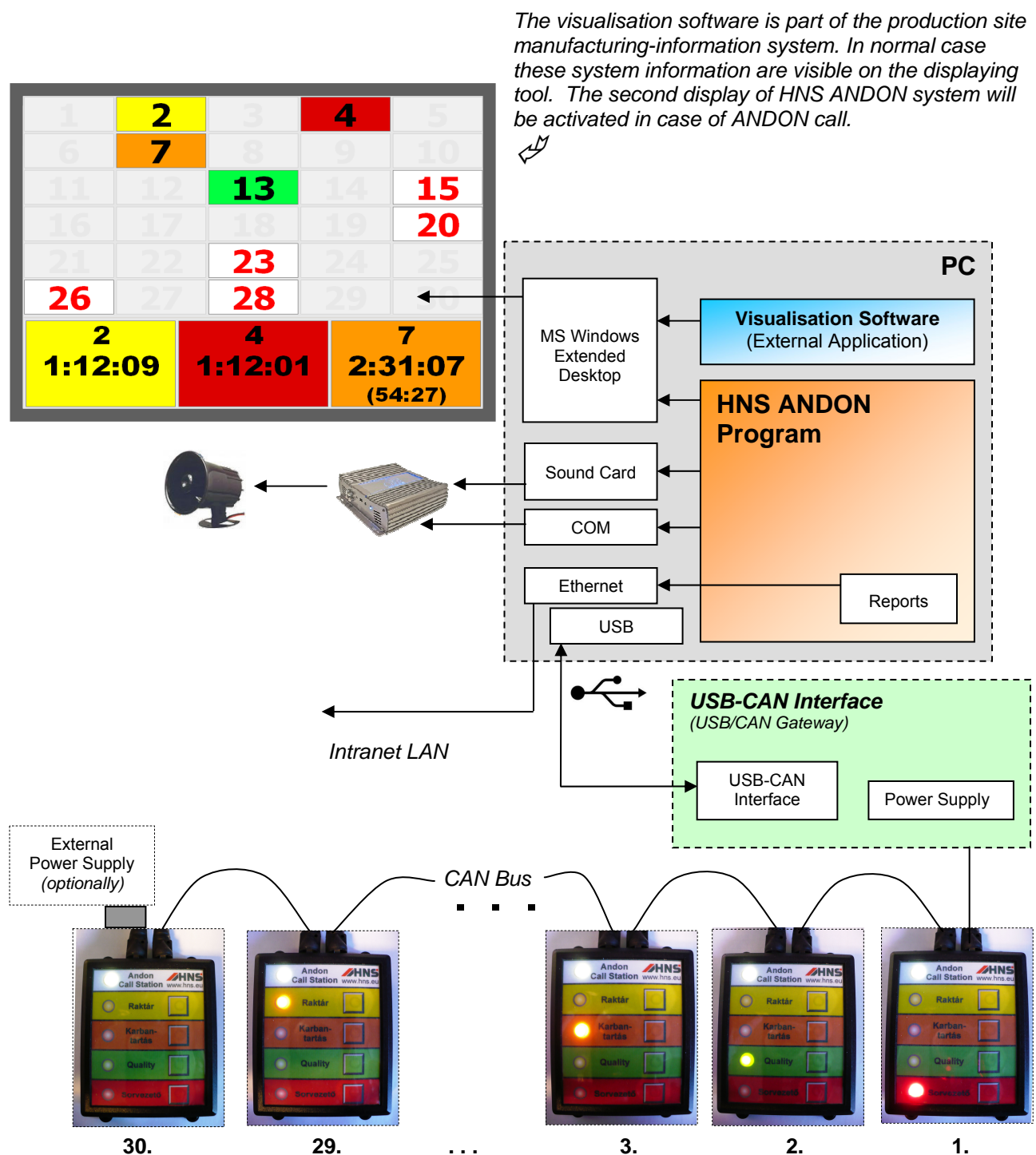# HNS ANDON
Call System

Content

Appendix

Andon Call Station (Call Device)
USB-CAN Interface (USB/CAN Gateway)
CAN Bus Cabling Information
Troubleshooting

1 Functionality

The production staff – in case of incapacitation - can ask for help to his job with usage of Lean ANDON based call system from different fields.

The program serves up to 30 ANDON call devices. The worker can ask for help with pushing the appropriate button of the call unit. The handling program accepts and reports back the request. The program handles the call acknowledgements. The program writes the ANDON events of line into log and call files. Daily report can be made about calls and services.

The following illustration shows the contact between the system and the HNS ANDON devices.

The visualisation software is part of the production site manufacturing-information system. In normal case these system information are visible on the displaying tool. The second display of HNS ANDON system will be activated in case of ANDON call.

2 Requirements

- HNS ANDON Program
  This program runs on Microsoft Windows operation system.
  See third section about installation of the HNS ANDON program!

- USB-CAN Interface (USB/CAN Gateway)
  Driver of USB-CAN Interface must be installed on the PC (new virtual COM port has to be appeared) and USB-CAN interface has to be connected to an USB port of the PC.
  See Appendix!

- Visualisation Display
  TV screen installed and configured to display extended desktop.

- Sound System
  Amplifier and speaker(s).

- CAN Bus
  Cable system, see Appendix!

- ANDON Call Stations
  Call Stations must be connected to the USB-CAN Interface via CAN bus.
  See Appendix!

3 Program installation

The program has to be installed with *HNS ANDON Setup.exe* program located on the HNS ANDON CD, but the HNS ANDON software can be also downloaded from *www.hns.eu/spc*. The install program installs the files necessary to run the program into the *C:\Program Files\HNS ANDON* folder of your computer.

Suggestion
The program is practically started automatically on user's logging in therefore a shortcut has to be created manually at the Start-up group of the Windows (the name of the program file is C:\Program Files\HNS ANDON\HNSANDON.exe; the starting status is practically set as minimized).

4 Program start

The program can be started clicking on the *Call System* item of the *HNS ANDON* menu.

Attention!
If the program is configured to start automatically when user is logged in as above mentioned then do not start it manually again!

Attention!
Before you turn off the computer you have to close the HNS ANDON – Call System program, stop the call system and close the program clicking on the right-up ⊠ icon of the program's main form or push the F10 function key.
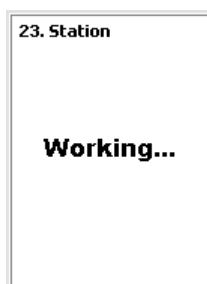
5 Program usage

5.1 Status display
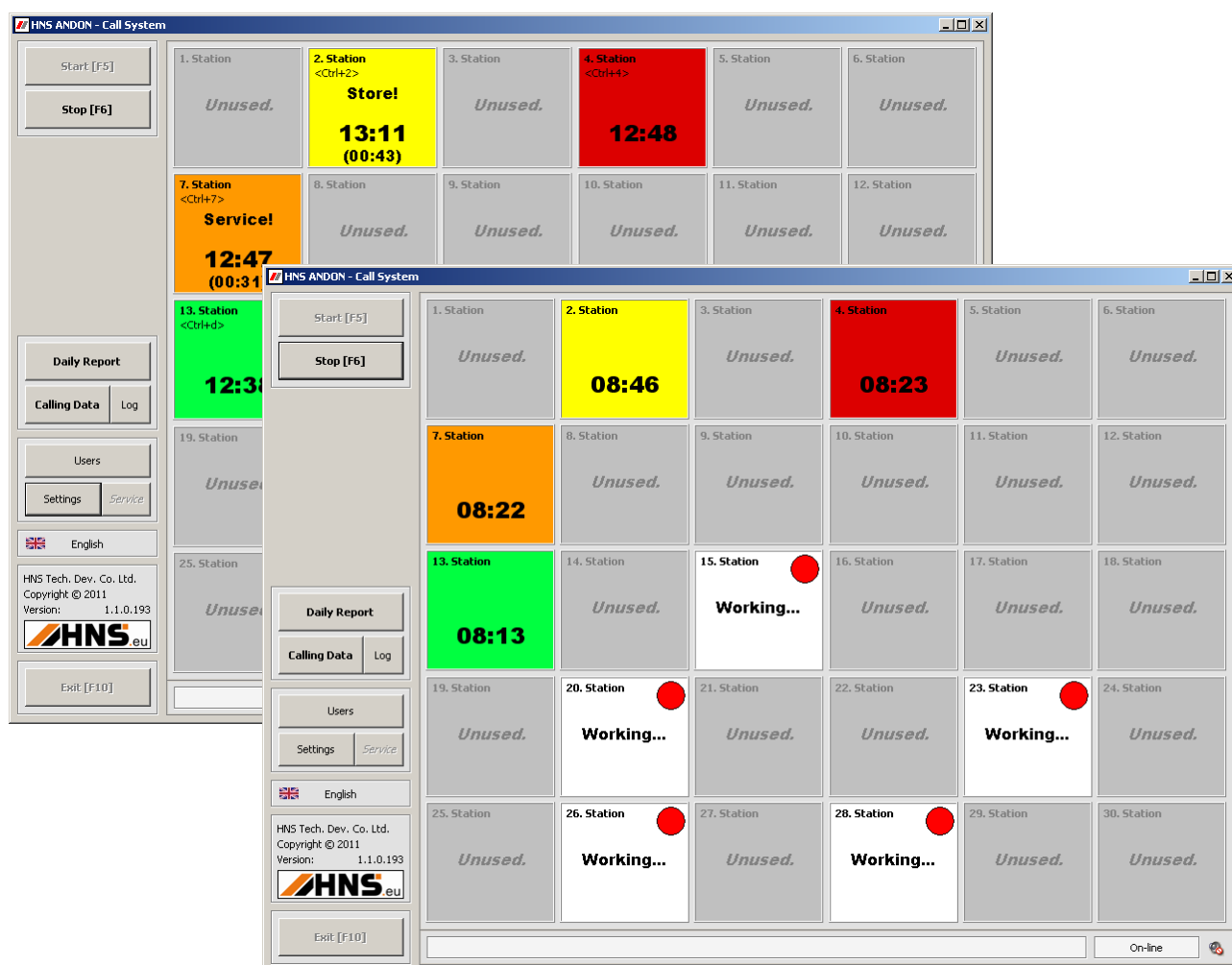
Subtitles and colours show status of the Call Stations as you can see below.

Station is out of use.
(Using of the Call Station has been turned off at program's settings.)

Station operates in order.
(There is no call at the Call Station.)

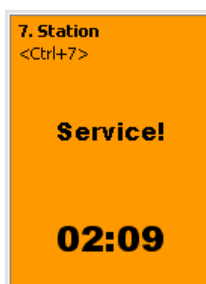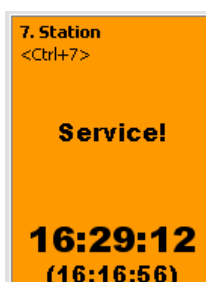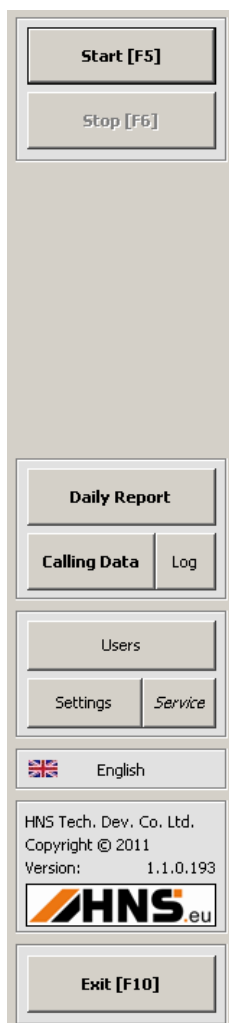|	
23. Station ● **Working...**	Call Station is not connected – hardware error detected. Flashing red signal means Call Station has broken connection (station is handled as being in last status of station when it was connected properly).
2. Station <Ctrl+2> **Store!** **07:54**	Yellow colour and flashing title – **Store!** Displaying elapsed time since call is started. *Elapsed time format [hour:]minute:second.*
13. Station <Ctrl+d> **Quality!** **16:24:40**	Green colour and flashing title – **Quality!** Displaying elapsed time since call is started. *Elapsed time format [hour:]minute:second.*
7. Station <Ctrl+7> **Service!** **02:09**	Green colour and flashing title – **Service!** Displaying elapsed time since call is started. *Elapsed time format [hour:]minute:second.*
4. Station <Ctrl+4> **Team Leader!** **08:58**	Red colour and flashing title – **Team Leader!** Displaying elapsed time since call is started. *Elapsed time format [hour:]minute:second.*
7. Station <Ctrl+7> **Service!** **16:29:12** **(16:16:56)**	Status display without flashing while the station is under serving. Serving time can be read under display of time elapsed between the calling and the serving starts (in parenthesis). *Elapsed time format ([hour:]minute:second).* *Acknowledgement (Team Leader is taking back the station) after serving can be started clicking on frame representing the Call Station or pushing the marked key <CTRL+station assigned key>.*

5.2 Visualisation display

In case of call the status and time information are automatically appearing on the TV screen.
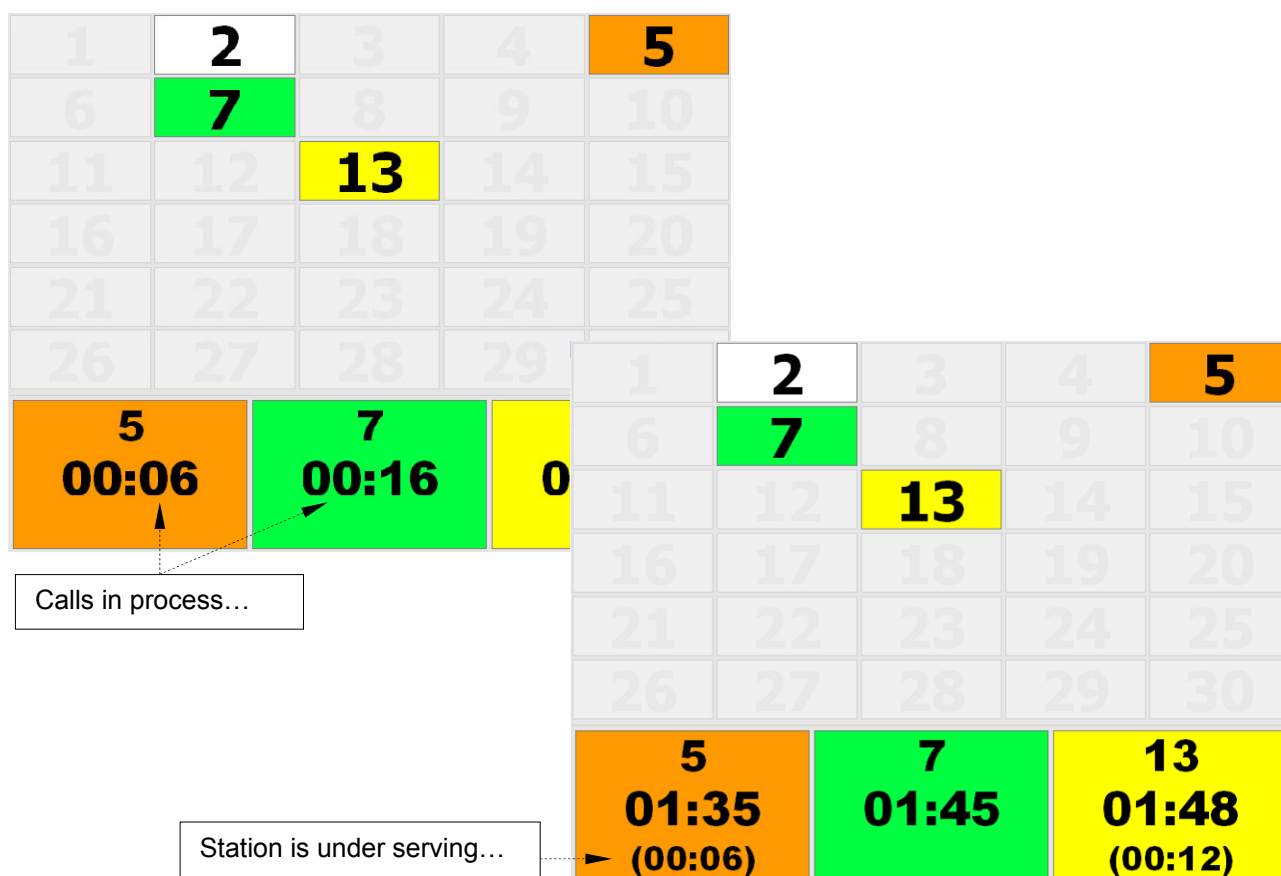
The status map of stations is shown on the display, on which the program illustrates status for each station with colours on above.

The program visualises data of first three calls (first three stations of the line) on bottom of display.

5.3 Function panel

Start/Stop functions

Start [F5]: start communication with Call Stations – turn in Call Stations.

Stop [F6]: stop communication with Call Stations – turn off Call Stations.

Report functions

Daily Report: open and display the daily report graphics.

Calling Data: open the Excel (csv) file containing logged calling data.

Log: open text file containing general log of the system.

Administrative functions

Users: use this function to enable or disable the password protection, to give Administrator's password and to edit list of users to personalise rights.

Settings: use this function to change settings of Call System.

Service: system configuration function, this function is available for the service only.

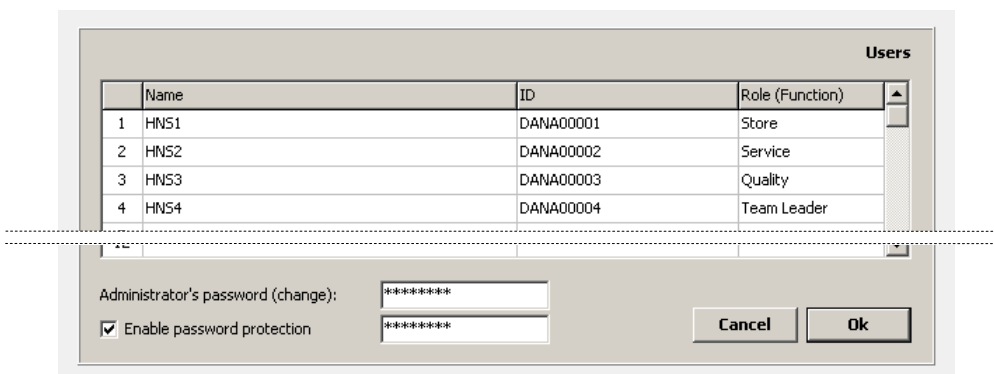**Exit**

Exit from the program.
Communication must be stopped pushing *Stop [F6]* button before exit.
If there is ongoing, not closed call then the program will display a warning message.
Measurement of not closed calls will be continued independently from program is running or not running.

5.4 Administrative functions

5.4.1 Users

	Name	ID	Role (Function)
1	HNS1	DANA00001	Store
2	HNS2	DANA00002	Service
3	HNS3	DANA00003	Quality
4	HNS4	DANA00004	Team Leader

Administrator's password (change): ********
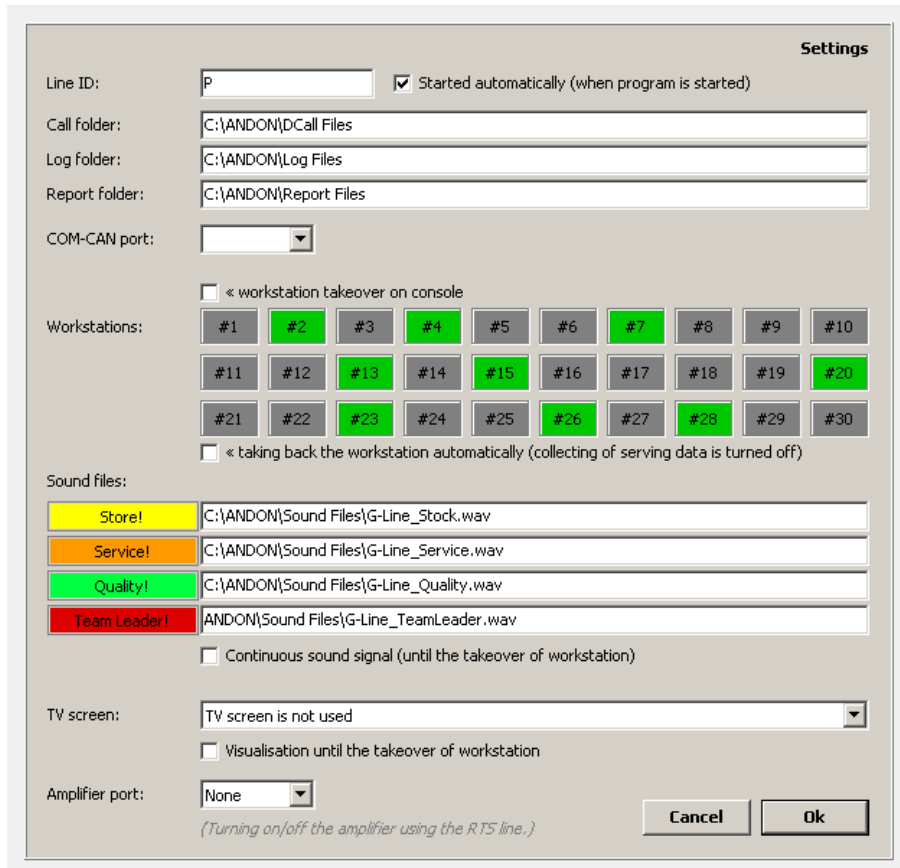☑ Enable password protection ********   Cancel   Ok

If „« *workstation takeover on consol"* option is turned on (see *Settings* below) then personal ID is required only for taking back to the production of given workstation – Team Leader has this right in the system.
If „« *workstation takeover on the consol"* option is turned off then the worker of called workstation also has to identify himself at the beginning of serving (it meaningfully happens on the computer and not on the Call Station).

To register the serving staff necessary to set ID and proper right as you see above and user's list has to be updated when staff is changed.

Usage of administrative functions can be protected with password – if it is not necessary then the password protection can be turned off. Give the administrator's password and turn on the checkbox on the form to turn on the password protection. Turn off the checkbox to disable password protection.

5.4.2 Settings

Line ID:	field for giving ID of the place of installation (e.g. identifier of production cell).
Started automatically:	turning on the Call Stations automatically when program starts.
Call folder:	path to the folder of csv files containing call data.
Log folder:	path to the folder of log file containing general events of the program.
Report folder:	path to the folder of report files containing daily reports.
COM-CAN port:	COM port that created by the USB-CAN Interface driver.
« workstation takeover…:	where the worker of called area has to take over the workstation, on the installed Call Station or on the PC (overtaking person is not identified by the system in case of takeover on console – on Call Station).
Workstations:	turning on/off installed Call Stations and displaying their current status.
« taking back the…:	workstation is taken back automatically at the same time of the takeover action.
Sound files:	name of MP3 or VAW files are played when a call has been started on a call device (you can use relative and fully qualified path both).
Continuous sound signal:	sound files can be played continuously (repeated till the workstation is not taken over by service staff) or only once when a call has been started.
TV screen:	list of available monitors, select the monitor (TV) here to use as the ANDON visualisation screen.
Visualisation only…:	visualise calls and elapsed time till takeover the workstation (upper line) or till the taking back (bottom line) when serving is closed on the visualisation screen.
Amplifier port:	if the external amplifier used to play sound is not able turned on continuously, the RTS modem control line of the selected COM port can be

used to turn on and off the amplifier (~5-12V between SUB-D9/7 output and
SUB-D9/5 signal ground).
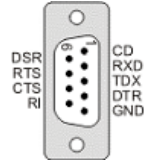
9 pin #	Acronym	Full name	Direction	Mean
3	TxD	Transmit Data	—»	Transmits bytes out of PC
2	RxD	Receive Data	«—	Receives bytes into PC
7	RTS	Request To Send	—»	RTS/CTS flow control
8	CTS	Clear To Send	«—	RTS/CTS flow control
6	DSR	Data Set Ready	«—	I'm ready to communicate
4	DTR	Data Terminal Ready	—»	I'm ready to communicate
1	DCD	Data Carrier Detect	«—	Modem connected to another
9	RI	Ring Indicator	«—	Telephone line ringing
5	SG	Signal Ground		

5.5 Report functions

5.5.1 Daily report

The program makes daily statistics about calls and services, and this statistical data can be displayed on bar
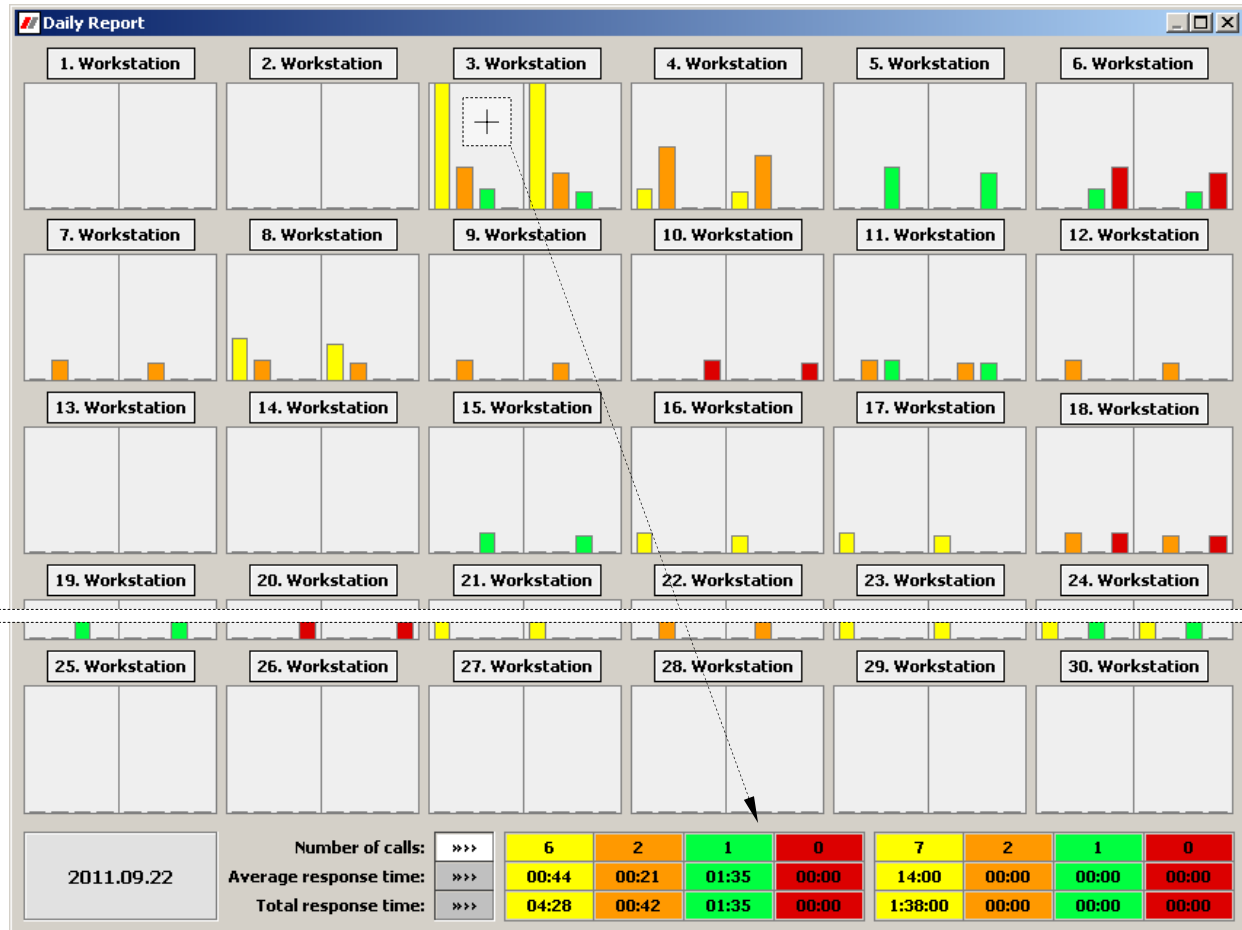graphs, as you can see below.
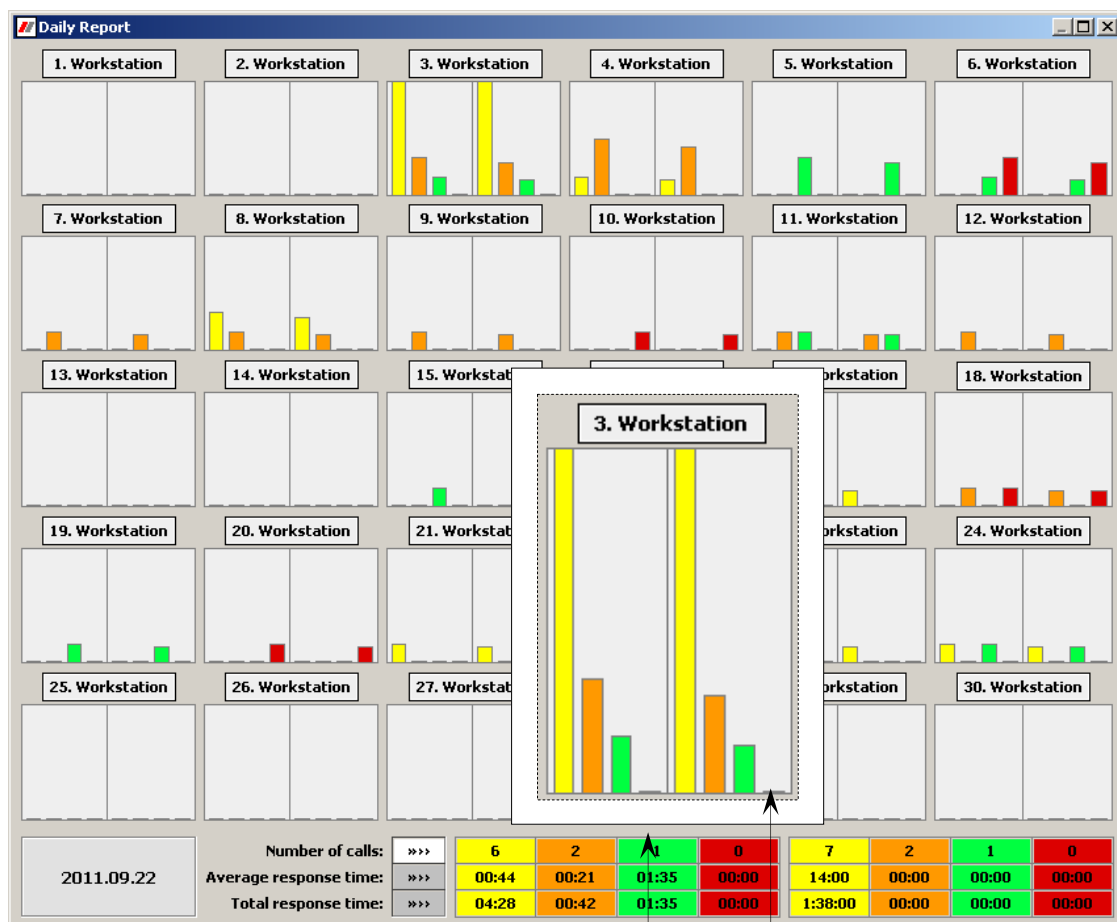
The graph contains two information areas for each workstation:

- left graph: statistics of the workstation about number of calls and times elapsed from the call till the
  start of serving,
- right graph: statistics of the workstation about number of servings and times elapsed from the start
  of serving till the taking back of the workstation.

Visualisation graphics of three statistics is optional in the daily report. Displayed statistics can be selected by clicking on the following mode representative buttons:

Number of calls: `»»»` : report about number of calls,

Average response time: : report about average response time,

Total response time: : report about total response time.

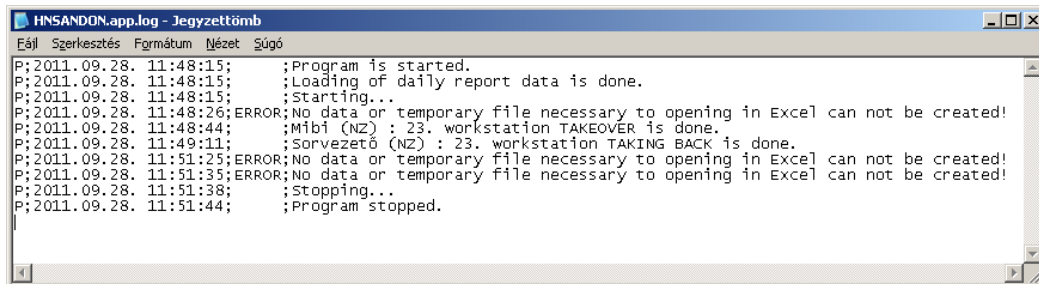The numerical data of workstations are displayable when the cursor is moved to the workstation diagram.

5.5.2 Calling data

This function opens the Excel (csv) file containing logged calling data.

5.5.3 Log

The function opens general log of the program.

All important events, error and status messages are registered at the program's log with the following contents:

1. production line identifier,
2. date and time of occurrence,
3. error mark if the entry contains text of an error message ("ERROR"),
4. text of event or text of registered message.

5.6 Exit

The communication with Call Station has to be stopped – you have to turn off the Call Stations – pushing the **Stop [F6]** button before you exit the program.

If there is (are) call(s) in process then the program asks for exit confirmation before exits.
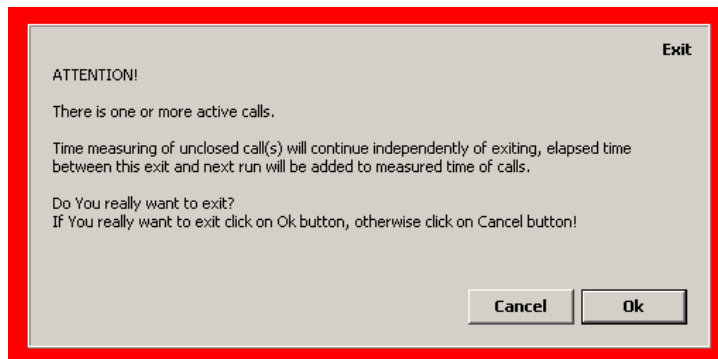
Exiting the program is possible clicking on the **Ok** button.

Comment
The measurement of time of calls being in process does not depend on whether the program is running or not. After starting the program, status of previously started calls will be visualised according to convenient status in given moment.

Andon Call Station

Preview and functions

Status LED for indicating status of communication with USB-CAN Interface.
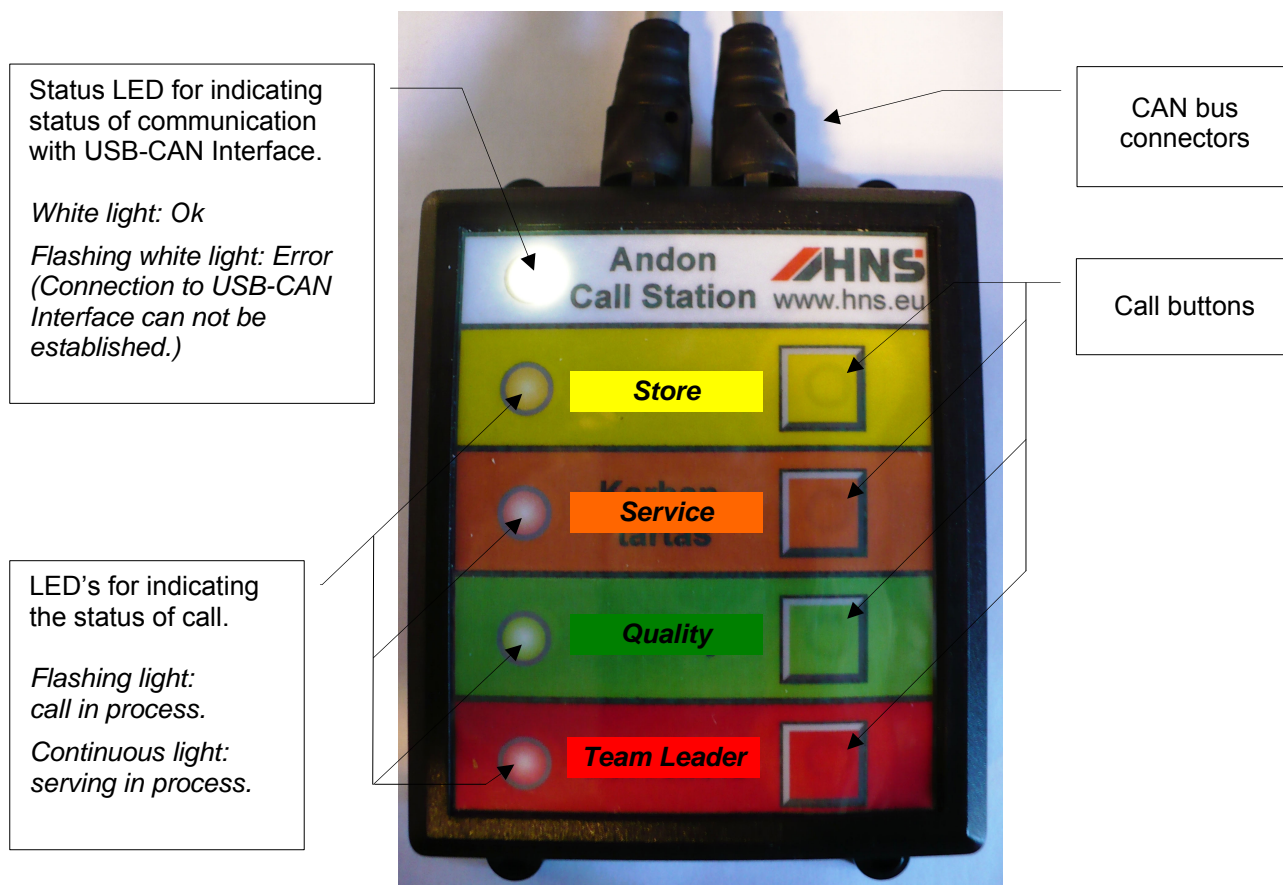
White light: Ok

Flashing white light: Error (Connection to USB-CAN Interface can not be established.)

LED's for indicating the status of call.

Flashing light: call in process.

Continuous light: serving in process.

CAN bus connectors

Call buttons

Store

Service

Quality

Team Leader

Connectors

CAN bus connector

CAN bus connector

Comment
The bus address (1-30) is stored in flash memory of Call Station. Call Station address is necessary for installation or changing the devices. Device address can be changed using Service function of HNS ANDON program. This function is available for the service only. Each device has preset address, see the back side label on device.

USB-CAN Interface
(USB/CAN Gateway)
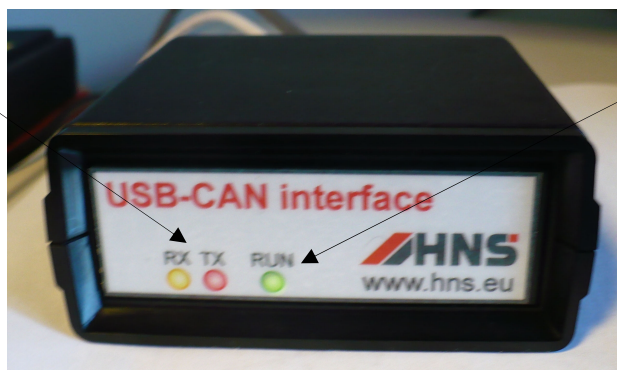
Preview and functions

Status LED for indicating status of communication between the USB-CAN Interface and the PC. (*Sending and receiving messages.*)
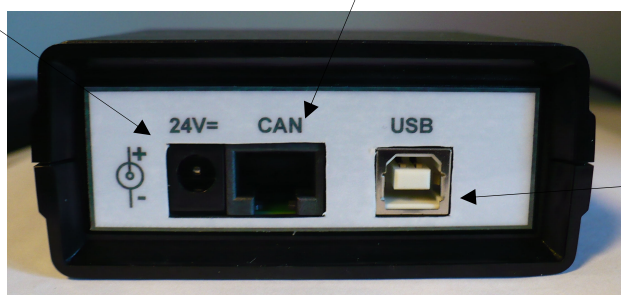
Status LED displaying the ready for operation status.

Connectors

CAN bus connector

24VDC power supply connector.

USB connector (PC connection)

Installation of USB-CAN device

The USB-CAN Interface connects the HNS ANDON CAN network of Call Stations to the USB port of the PC. HNS ANDON program running on PC uses USB port as a (virtual) COM port. USB-CAN Interface device driver installation (on PC) is necessary to run.

Driver of USB-CAN Interface is delivered on HNS ANDON CD or it can be downloaded from www.hns.eu/spce (FTDI bus and FTDI port driver).

Installation happens in two steps. USB Serial Converter chip driver is installed at first step and the virtual Serial Port is installed at second step – all steps started automatically when the USB-CAN Interface has been first time connected.
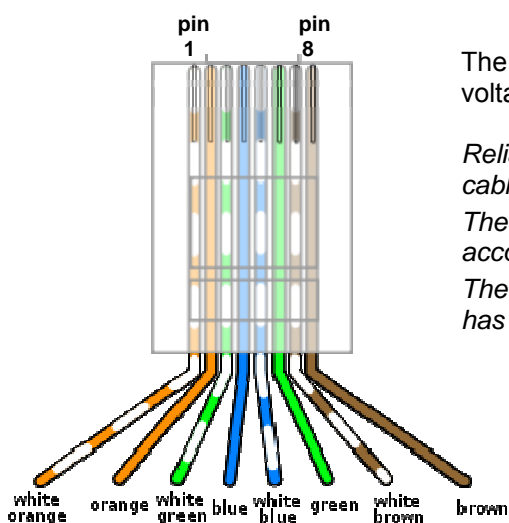

Attention!

The COM port created during the installation has to be selected in program's Settings / COM-CAN port list (see Settings above)!

CAN Bus Cabling Information

Overview

Cat5 Patch Cable

pin 1   pin 8
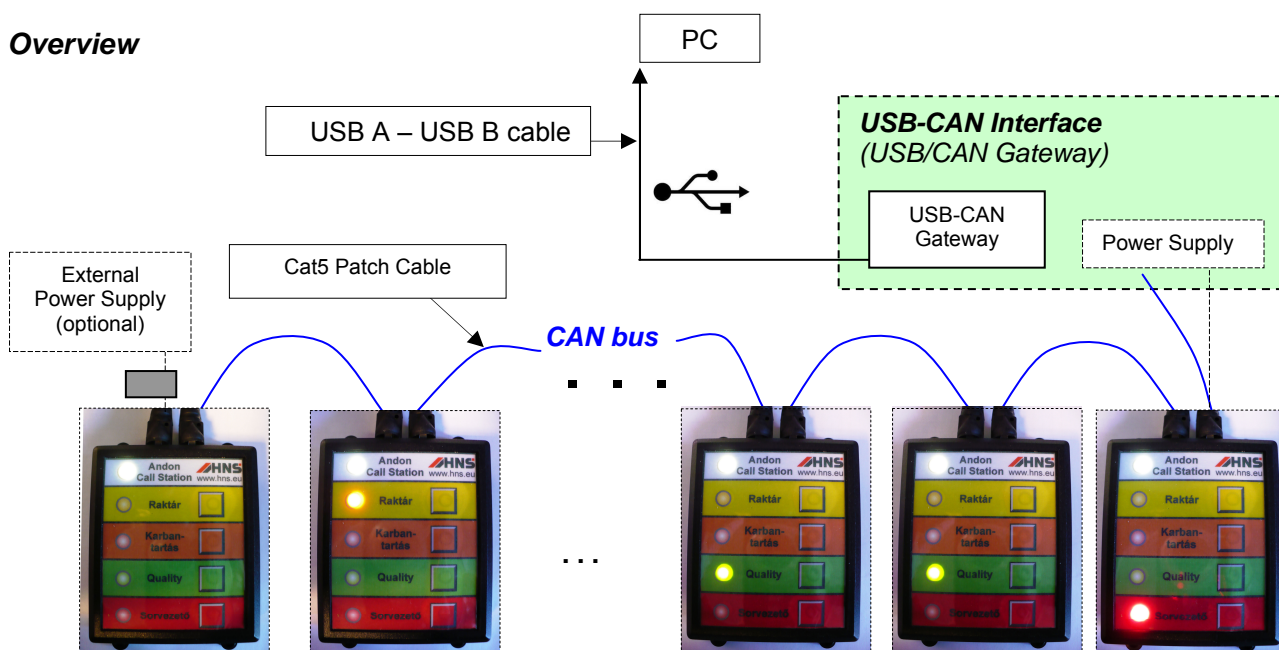
The cables transport CAN bus signals (CANH, CANL) and supply voltage to each Call Station.

Reliable, good quality cables and connectors have to be used for cabling!

The cable fibres have to be separated and prepared for crimping according to the colours on left side picture!

The cable fibres have to be driven into the connector and crimping has to be made!

white orange   orange   white green   blue   white blue   green   white brown   brown

ATTENTION!
Connection of prepared cables has to be checked by measuring before connecting because a cabling failure (e.g. short-circuits) may damages the CAN devices!
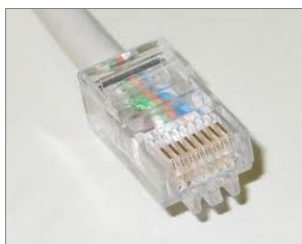
CAN bus – RJ45 connector		
1	GND	White-orange
2	GND	Orange
3	CANH	Green-white
4	VIN (24VDC)	Blue
5	VIN (24VDC)	White-blue
6	CANL	Green
7	GND	White-brown
8	GND	Brown

Item	Information
Cable type	Cat5e patch cable
Connector type	Cat5 RJ45 plug with strain relief
Assembling mode	Crimp
Track line	Physical order of stringing Call Stations does not have to be following the logical sequence.

Comment
The USB-CAN Interface has to be compulsory connected to first or last station on the CAN bus.

Attention!

Do not connect the Ethernet network and the CAN bus because of the different signal levels will damage the connected devices!

To avoid electrical shocks, before connecting ANDON devices remove the UTP testers used for checking and measuring the cabling from CAN bus!

Connect the Call Stations starting from USB-CAN Interface device and check Call Station operation when a Call Station has been connected! White LED on Call Station must be turned on and must not flash – flashing indicates the connection error.

Troubleshooting

Symptom	*Description*	Fault	Repair
Green RUN LED does not light on USB-CAN Interface	*USB-CAN Interface is not working*	No supply voltage on USB-CAN Interface or supply voltage is too low	Check 24V= supply voltage on the USB-CAN Interface and change power supply if improper voltage is measured
Yellow RX and red TX LED's do not light on USB-CAN Interface	*USB-CAN Interface can not communicate with the PC*	USB port of USB-CAN Interface is not connected to USB port of PC	1. Check the USB cable and check the connection between the USB-CAN Interface and the PC 2. Run HNS ANDON program and push the Start button, if it is not started automatically 3. Reconnect the USB cable and restart the HNS ANDON program, than push the Start button, if it is not started automatically 4. Check the virtual COM port assigned to the USB-CAN Interface – use Windows' Device Manager –, and reinstall the driver if necessary
White LED does not light on the Call Station	*Call Station is not working*	CAN bus cable is broken	Check bus cables
		No supply voltage on Call Station or supply voltage is too low	1. Check 24V= supply voltage on the USB-CAN Interface and change power supply if improper voltage is measured 2. Check 24V= (>16V=) supply voltage on the Call Station and check bus connectors if improper voltage is measured *See CAN bus – RJ45 connector description above!* 3. If supply voltage is too low on the Call Stations and all connections are properly, than external power supply must be installed on end of the CAN bus or use sorter bus cables *See above in the Functionality section!*
White LED is flashing on the Call Station	*Call Station is not connected to the USB-CAN Interface*	CAN bus cable is broken	Check bus cables
		Call device does not connected properly to CAN bus	Check connectors
		Supply voltage of Call Station is slightly low	Check 24V= (>16V=) supply voltage on the Call Station *See CAN bus – RJ45 connector description above!* If supply voltage is too low on the Call Station, than external power supply must be installed on end of the CAN bus or use sorter bus cables *See above in the Functionality section!*